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ARTICLE XIV.

A SKETCH OF THE BOTANY OF THE BASIN OF THE GREAT SALT LAKE OF UTAH.

BY E. DURAND.

THIS sketch has been suggested by the examination of a collection of botanical specimens, made in the vicinity of the Great Salt Lake City, by Mrs. Jane Carrington, and placed in my hands through the kind remembrance of our colleague, Colonel Thomas L. Kane.

All the plants that have, thus far, been received from that extraordinary region, and have been recorded in the various botanical reports of Professor Torrey, were collected by Colonel Fremont, in 1843 and '45; by Major Stansbury, in 1849 and '50; and by Lieut. Beckwith, in 1854. These collections, together with that lately handed to me by Col. Kane, although affording but a limited number of species, are well deserving of a particular notice:—1st, As exhibiting two distinct sets of plants; some vegetating almost exclusively in a soil saturated with saline principles; others never growing inside of such soils. 2d, As evincing in the latter set of plants a complete identity with those of the surrounding parts of Oregon, contrary to the pre-conceived idea that the vegetation of the belt of the Great Salt Lake, (a lake, the waters of which contain 22 per cent. of saline matter,) would be stamped with a peculiar character, originating in the ambient action of an atmosphere supposed to be more or less charged with saline vapours, or with the pulverulent saline efflorescence, which, in dry weather, covers the whole surface of the low plains, and must be dispersed by the winds on the surrounding valleys. 3d, On account of the limited number of distinct species that have been afforded by the four collections above mentioned; a circumstance inducing the conjecture, that the vegetation of the Great Salt Lake Basin is, in reality, much less diversified than that of the other sections of Oregon.

The vegetable growth of the saline flats bordering the Lake, is limited to about one dozen species of hardy and mostly shrubby plants of a mournful glaucous foliage, little calculated to enliven the surrounding scenery. The most prominent of these plants are the *sarcobatus vermiculatus,* (the Pulpy Thorn of Lewis and Clarke,) the *Grayia polygonoides,* (Grease Wood,) and other species of the order *Chenopodiaceæ;* perhaps several species of *Artemisia,* (the sage of the Western travellers,) and the famous Bunch Grass, a large grass, yielding a good pasture, the botanical character of which has not yet, I think, been determined.

The vegetation of the valleys, of the mountain-tops, and of the small meadows at their base, do not differ in any particular from that of the surrounding regions lying out of the reach of the saline emanations of the Lake. In the lower and swampy grounds, are willows and rose bushes, horse-tails and grasses, interspersed with violets and anemones, some species of the order *Liliaceæ* and other meadow flowers; the valleys above sparkle with more brilliant blossoms of *Leguminosæ, Rosaceæ, Onagraceæ, Compositæ, Borraginaceæ, Polemomaciæ, &c.;* whilst, on the more elevated zones, are found clusters of various dwarfish and acerose species of *Phlox,* the purple *Eriogonum* and a few other mountain species growing under the shade or by the side of stunted trees of the coniferous tribe.

If, comparatively to other Oregon sections of equal extent, the Flora of the Great Salt Lake Basin should prove to be really as limited in the number of its species as it appears to be, judging from the examination of the four collections referred to, it is proper to inquire into the causes of this apparent scantiness of distinct species in the vegetation of that strange country.

First of all, the whole circumference of the Lake consists of extensive low plains which have evidently, at a remote period, formed part of it, and are so little elevated above the surface of the water, that a rise of a few feet above its present level, would inevitably flood their entire superficies to a great distance north and south. All these flats are composed of the same soil, a mixture of sand and clay, highly saturated with chloride of sodium, and affording no other vegetation but occasional patches of saline plants. In rainy weather, these plains are covered with a thick mire, almost impassible to the traveller, which dries rapidly under the rays of the sun, when it becomes covered with a light crystalline efflorescence, resembling white-frost; the reflection of which is highly injurious to the sight, and, I should think, easily dispersed by the winds. The whole of the western shores is bounded by ridges of barren hills, beyond which stretches the Great Desert of Utah.

Very different, however, is the aspect of the great valley of the Wahsatch Mountains, east of the Mormon City. Here the declivities are generally covered with verdure; numerous small streams of fresh water descending from the summits, carry down with them the disintegrated particles of the feldspathic rocks above, which they deposit along the sides of the hills, and sometimes as far down as their base, forming the small meadows above mentioned. These feldspathic particles, mixed with vegetable mould and the detritus of the limestone of which the mountain slopes are principally composed, forms with them a rich and light soil; which, absorbing moisture rapidly, is very productive of vegetation, and adapted to almost every kind of culture.

This line of deposit is narrow, and not continuous. Opposite the Great Salt Lake City, which lies in the centre of the fertile valley of the Wahsatch Mountains, it occupies the entire space from the mountains to the shores of the Lake. The arable lands thereon, from Bear River, its northern terminus, to the Mormon City, and those situated above, along the right bank of the River Jordan, are estimated by Major Stansbury at about 744 square miles, perhaps the richest lands of Utah. To these must be added some plots of good soil, abundantly covered with verdure, on Antelope, Stansbury and Carrington Islands, and on the great northern promontory. This is about all the lands susceptible of affording vegetation in the whole of that extensive area, constituting the Basin of the Great Salt Lake.

The characters of the soil of that very strange region, may, therefore, be stated as follows:—1st, Immense flats of sandy plains, highly saline and mostly sterile, producing but a few hardy grayish-looking plants peculiar to such soils. 2d, Rocky summits of mountains, equally denuded of vegetation. Lastly, fertile valleys on the declivities of the mountains and on the islands and promontories of the Lake, all possessing a soil almost homogeneous in its chemical constitution, and affording fully the nine-tenths of the limited number of distinct species composing the Flora of the Great Salt Lake Basin.

To this identity of soil, of exposure and of atmospheric influence in these fertile sections, are we to look for the true causes of the remarkably small number of species belonging to this Flora. Otherwise, these species do not seem to be affected by the saline emanations, and resemble in their general characters those collected by Mr. Nuttall, on the Valleys of the Wallawalla; by the Rev. Spalding, on those of the Sweet Water River, and by other botanical collectors on the ridges of the Snake River and other slopes of the Blue Mountains of Oregon.

In the following sketch in which I have embodied the four collections made by Messrs. Fremont,* Stansbury, Beckwith, and by Mrs. Carrington, I do not pretend to give a full enumeration of the actual botany of the Salt Lake Basin; but I am confident that they contain the greater portion of the plants growing in that region. I expect, moreover, to obtain from the same source some additional materials, which may form hereafter the subject of a supplement to the present sketch.

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* I must say that the specimens brought by Colonel Fremont from the regions of Oregon and California, had been greatly injured by the difficulties and accidents of the voyage, and many therefore could not be properly exmined by Dr. Torrey.

Philadelphia, March 1st, 1859.

DESCRIPTIONS OF THE SPECIES CONSTITUTING THE BOTANY OF THE BASIN OF THE GREAT SALT LAKE OF UTAH, AS FAR AS IT IS KNOWN.

RANUNCULACEÆ.

ANEMONE *Pennsylvanica.* Linn. Torr. and Gr., fl. 1, p. 14. Wind Flower, leaves, 3—5, parted, on long petioles; segments oblong; incisely toothed at the apex; involucre and involucels similar, two-leaved, sessile. Flowers white, about one inch in diameter. May and June. Great Salt Lake Valley. Maj. Stansbury.

DELPHINIUM *azureum.* Mich. Torr and Gr., fl. 1, p. 32. (Larkspur.) Leaves, 3—5, parted, many-cleft, with linear lobes; Petals shorter than the Sepals, the lower ones deeply two-cleft and densely bearded. Flowers azure. May. Great Salt Lake Valley. Maj. Stansbury.

Var. δ., Torr. & Gr., Fl. 1, p. 32. Densely velutinous; flowers pale-blue, almost white; Sepals with a brown pubescent spot. Great Salt Lake City. Mrs. Carrington.

D. *Menziesii,* Hook, fl. Bor. Am. 1, p. 25. Torr. & Gr., fl., suppl., p. 661. Stem 6—12 inches high; leaves five-parted; the divisions two to three-cleft, lobes mostly linear, entire. Flowers on long pedicels, large, violet-blue colour, upper petals whitish. May and June. Near the Great Salt Lake. Lt. Beckwith.

Lt. Beckwith's specimen apparently a white-flowered variety. Torr.

BERBERIDACEÆ.

BERBERIS (Mahonia) *aquifolium,* Pursh. fl. 1, p. 219, f. 4. Torr. & Gr., fl. 1, p. 50, (Barberry.) Leaflets 3—6 pairs, coriaceous, unequilateral, or slightly cordate at base, one-nerved, the margin repand with spinulose teeth; racemes short; flower yellow; berries dark purple. On the sides of the mountains, near the Lake. May. Maj. Stansbury.

PAPAVERACEÆ.

ARGEMONE *hispida,* Gray, Pl. Fendl. p. 5. (Prickly Poppy) Stem 1—2 feet high, densely setose and hoary throughout, with a short and close hirsute pubescence; flower white, 3—4 inches in diameter; capsule covered with strong spines (called Thistly Plant by the inhabitants,) flowers early in the spring. Mountain-sides near the Lake, Maj. Stansbury.

FUMARIACEÆ.

CORYDALIS *aurea,* Willd. Torr. & Gr., fl. 1, p. 68 (Golden Corydalis.) Stem 6—8 inches high; leaves slender, finely divided; racemes terminal and opposite to the leaves; flowers golden-yellow. July. Stansbury Island. Maj. Stansbury.

CRUCIFERÆ.

STREPTHANTUS *Sagittatus*, Nutt. in Torr. & Gr., fl. 1, p. 76. Smooth, and branched above, with leaves oblong, acute, sagittate, and clasping; flowers lilac-red, not spotted. May. Shores of the Lake, Maj. Stansbury. Yoab Valley, Mrs. Carrington.

S. . . . *Crassicaulis*, Torr. in Stansb. Rep., p. 348, T. 1. Stem inflated, hollow; leaves mostly radical, deeply pinnatifid, the terminal lobe much larger than the others, and triangular-deltoid. May. Eastern Shore of the Great Salt Lake, Maj. Stansbury.

CARDAMINE *rhomboidea?* D. C., (a poor specimen,) cauline leaves sessile, round-oval and somewhat hirsute; flowers yellowish-white; silique linear, 4—6 seeded. May. Yoab Valley, Mrs. Carrington.

SISYMBRIUM *canescens*, Nutt. in Torr. & Gr., fl. 1, 92. (Tansey-Mustard.) Leaves bipinnatifid, lobes oblong-lanceolate, somewhat toothed. Siliques in elongated racemes, half as long as the pedicels. May. Western Shores of the Salt Lake, Maj. Stansbury.

ERYSIMUM *asperum*, D. C. Torr. & Gr., fl. 1, p. 95. (Wall-Flower.) Stem 12—18 inches high, canescent, with a scabrous appressed pubescence; cauline leaves linear-lanceolate entire; radical ones runcinate; flowers large, fragrant, yellow. Rocky soil. May. Eastern Shores of the Lake, Lt. Beckwith, and Mrs. Carrington.

. . . . Var. *Purshii*. The very same form as Pursh's specimen in herbarium of Phila. Acad. of Nat. Sci. Stems simple, several from the same root, smaller than the preceding, scarcely 1 foot high, few-flowered; radical leaves entire, or nearly so; siliques 1½—2 inches long. June. Great Salt Lake Valley, Mrs. Carrington.

LEPIDIUM *intermedium*, Gray, Pl. Wright, No. 2, p. 15. (Peppergrass.) Upper leaves linear, entire, glabrous or nearly so, and resembling slender forms of *L. Virginicum*. May. Valley of Utah, Mrs. Carrington.

L. . . . . *corymbosum*, Hook & Arn. Bot. Beech. *L. montanum*, Nutt. in Torr. & Gr., fl. 1, p. 116. Corymbosely branched from the root; stem purpurescent; radical leaves pinnatifid, or bipinnatifid; flowers rather conspicuous, white and crowded; silicles elliptical, scarcely emarginate, wingless. July. Valley of the Wahsatch mountains, Mrs. Carrington.

CAPPARIDACEÆ.

CLEOME *lutea*, Hook. fl. Bor. Am. 1, p. 70, T. 25. *Cleome aurea?* Nutt. Leaves five foliate, leaflets narrowly lanceolate, entire; petals yellow; pods oblong-lanceolate, about the length of the stipe. June. Carrington Island, Maj. Stansbury.

VIOLACEÆ.

VIOLA *palustris*, Linn. Torr. & Gr., fl. 1, 139. Leaves reniform-cordate; stipules broadly ovate, acuminate; rhizoma articulated, somewhat scaly; flower of a pale lilac colour, smaller than those of *V. cuculata*. May. Yoab Valley, and Great Salt Lake City, Mrs. Carrington.

V. . . . *pedunculata,* Tor. & Gr., fl. 1, p. 141. Caulescent. Leaves rhomboid-ovate, crenately toothed, abruptly narrowed at the base into a petiole; flower large, deep yellow; petals broadly obovate, the two upper with conspicuous claws, lateral ones bearded at base; spur very short. Borders of the Great Salt Lake, Maj. Stansbury.

PORTULACACEÆ.

LEWISIA *rediviva,* Pursh. fl. 1, p. 366, Torr. & Gr., Suppl. p. 677. Root thick, fusiform and branching, covered with a brownish bark; leaves densely imbricate on the short thick caudex, succulent, linear-oblong; scape short, fleshy, articulated above the middle, bearing a single flower with an involucre of 5—7 subulate scales. Flower large, petals 8—12, oblong-linear, rose-coloured. A very singular plant, called by the Indians *Spoetlum,* or *Spatulum.* The root is largely employed as an article of food. Stripped of its bark, the white inner portion is boiled in water, and forms a substance similar to sago, or arrow-root. Yoab Valley, Mrs. Carrington.

LINACEÆ.

LINUM *perenne,* Linn. Torr. & Gr., fl. 1, p. 204. (Flax.) Leaves alternate, linear-acute; flowers terminal, blue; sepals oval, with membranaceous margins, three to five-nerved. Yoab Valley, Mrs. Carrington.

GERANIACEÆ.

ERODIUM *cicutarium,* L'Her. Torr. & Gr., fl. 1, p. 208. (Storksbill.) Stem prostrate; leaves pinnately divided, segments pinnatifid, incised or acute; flowers umbellate, light-purple colour. Islands of the Great Salt Lake. June. Maj. Stansbury.

ANACARDIACEÆ.

RHUS. . . . . (Sumach.) A species of Rhus, not collected, is mentioned by Col. Fremont as forming thickets at the north end of the Salt Lake.

MALVACEÆ.

SIDALCEA *malvæflora,* Gray, Pl. Wright, 1, p. 16. A plant 2—8 feet high, with purple flowers. Radical leaves orbicular, lobed or incisely crenate; cauline ones 3—5 parted, segments three-lobed, dentate at top. Raceme multiflore. June. Antelope Island, Maj. Stansbury.

MALVASTRUM *coccineum,* Gray, Pl. Fendl. p. 24.

Var. *grossulariæfolium,* Torr. in Maj. Stansb. Rep., p. 384. Stems very pubescent, 15—20 inches high; leaves on long petioles, deeply three to five-parted; segments three-cleft; racemes 3—4 inches long, terminal, many-flowered, shortly pedunculate, light-red. Islands and shores of the Great Salt Lake. June. Col. Fremont, Maj. Stansbury, and Mrs. Carrington.

BOMBACEÆ.

Sarcobatus Vermiculatus, Torr. in Emory's Report, p. 149. *S. Maximiliani,* Nees; *Fremontia Vermicularis,* Torr. in Pl. Frem. Smithson. Contr. vi., p. 6. *Batis Vermicularis,* Hook. fl. Bor. Am. 2, p. 188. A curious thorny shrub, 6—8 feet high, having much the habit of *Hibiscus Syriacus,* and found in saline soils, where it occupies almost exclusively the bottom of neighbouring streams; it is eminently a saline shrub, and its leaves have a very salt taste. Stem diffusely branched; flowers dioicious, in terminal ovoid aments, the staminate flowers at the summit; leaves alternate, linear, fleshy, almost terete, 6—12 lines long; calyx broadly campanulate, five-parted; no corolla; stamens five, short; ovary five-celled, hairy. It abounds on certain parts of the shores of the Great Salt Lake, and at Strong's Knob. Maj. Stansbury. (Called Pulpy Thorn by Lewis and Clark.)

LEGUMINOSÆ.

Cicer *arietinum,* Linn. (Chick-Pea.) Stem angled, slightly villous; leaflets 15—17, oval, dentate; peduncles axillary, one-flowered; flowers purplish or white. Perhaps introduced? Salt Lake Valley, Maj. Stansbury.

Vicia *Americana,* Muhl. Torr. & Gr., fl. 1, p. 269. (Vetch.) Leaflets 10—14, elliptical, obtuse, mucronate, strongly reticulated, with undulating margins; peduncles shorter than the leaves, four to eight-flowered; flowers purplish-blue. June. Great Salt Lake Valley, Maj. Stansbury, Mrs. Carrington.

V. . . . *Oregona,* Nutt. in Torr. & Gr., fl. 1, p. 270. Stem weak and pubescent, 10—15 inches high; leaflets 6—8 pairs, elliptical-oblong, cuspidate, strongly veined; peduncles three to five-flowered, rather shorter than the leaves. Flowers smaller than the preceding. Fillmore City, Mrs. Carrington.

Lathyrus *polyphyllus,* Nutt. in Torr. & Gr., fl. 1, p. 247. (Vetchling.) A robust plant, with erect and angled stem. Leaflets 5—8 pairs, oblong, veined, obtuse, 2—2½ inches long (in my specimens;) peduncles shorter than the leaves; flowers rather small, light-purple. Valley of the Great Salt Lake, Mrs. Carrington.

L. . . . *Venosus,* Muhl. Torr. & Gr., fl. 1, p. 274. Var. Leaflets broadly ovate, almost round, strongly veined, 5—7 pairs; peduncle five to ten-flowered, about as long as the leaves; flowers rather large, purplish. Great Salt Lake Valley. June. Mrs. Carrington.

Psoralea *argophylla,* Pursh, Torr. & Gr., fl. 1, p. 301. Erect, divaricately branched; leaves three to five-foliate; spike pedunculate, interrupted; lower teeth of the calyx longer than the flower. The whole plant very silky-silvery. July. Mrs. Carrington.

GLYCYRRHIZA *lepidota,* Nutt. Torr. & Gr., fl. 1, 249. (Liquorice.) Stems 2—5 feet high; flowers whitish, in pedunculate spikes; legume densely beset with prickles; root long, creeping, with the taste of liquorice. Northern extremity of the Great Salt Lake, Col. Fremont.

ASTRAGALUS *adsurgens,* Pall. Torr. & Gr., fl. 1, p. 330. (Milk-Vetch.) Stem elongated, ascending or prostrate; leaflets 7—12 pairs, oblong, obtuse, pale green; flower white shaded with purple. Western Shore of the Great Salt Lake, Maj. Stansbury.

A. . . . . *Beckwithii,* Torr. in Lt. Beckwith's Rep., p. 120. Stems branching from the base, slender, 6—8 inches high; peduncles about the length of the leaves, 5—7 flowered; calyx oblong, campanulate, with subulate teeth. South of the Great Salt Lake, Lt. Beckwith; and Eastern Valley, Mrs. Carrington.

A. . . . . *Purshii,* Dougl. in Hook., fl. Bor. Am. 1, p. 152. *Phaca mollissima,* Nutt. in Torr. & Gr., fl. 1, p. 350. Almost stemless, densely covered with white silky hairs. Leaves petiolate; leaflets 4—6 pairs, ovate, obtuse; peduncles shorter than the leaves, three to five-flowered; flowers pale-purple, one inch or more in length, the calyx about two-thirds the length of the corolla; pods rather large, covered with fine yellowish-white wool. May. Mrs. Carrington.

A. . . . . *Utahensis,* Torr. in Beckw. Rep., p. 120. *Phaca mollissima.* Var. *Utahensis,* Torr. in Stansb. Rep., p. 385, fig. 2. Densely white-tomentose; stems decumbent, short, Torr. (in my specimens 6—8 inches long;) leaflets 6—9 pairs, broadly ovate, or nearly orbicular; peduncles equalling, or generally exceeding the leaves; subcapitulately three to six-flowered; flowers rather large, violet-purple. Legume sessile, extremely woolly, strictly one-celled. Shores and Islands of the Great Salt Lake, Maj. Stansbury, Lt. Beckwith, and Mrs. Carrington who remarks that it flowers several times a season.

A. . . . . *diphysus?* Gray, Pl. Fendl., p. 34. Torr. in Beckw. Rep., p. 120. "Only in flower, not accurately determined." South-western end of the Great Salt Lake, Lt. Beckwith.

A. . . . . Specimens in a bad state, and too young. Stems slightly pilose, several from the same root, 4—6 inches high; leaflets 7—10 pairs, small, obtuse or emarginate; peduncles shorter than the leaves, few-flowered. Great Salt Lake Valley, Mrs. Carrington.

HEDYSARUM *boreale?* Nutt. Gen. 2, p. 100. Torr. & Gr. fl. 1, p. 356. (Sainfoin.) I cannot but consider *H. boreale & H. canescens* of Nuttall, and *H. Mackensii* of Richardson, as forms of the same species, which it is impossible to separate. Mrs. Carrington's specimens seem to be larger than any heretofore described. She remarks that her plant is 2 feet high, but from the long decumbent branches, at least 15 inches in length, which she has sent, I should judge it must be somewhat higher. The whole plant is glaucous, slightly canescent and quite decumbent; the stem is thick, hollow, striate and pubescent; the leaflets about 8 pairs with an impair, oval-oblong and veinless; peduncles much longer than the leaves with a raceme of 15—25, purplish-blue flowers; shortly pedicellate, with a small bract at the base of the pedicel; calyx short, villous, with subulate teeth; vexillum and wings shorter than the keel: joints of the legume 3—4, nearly orbicular.

Prof. Torrey in Stansbury's Report, p. 385, mentions *H. Mackensii*, (undoubtedly the same plant,) as found on Promontory Range of the Great Salt Lake. Mrs. Carrington's plant appears so luxuriant and tender, that it will likely prove in cultivation a very valuable food for cattle, as the generality of the sainfoins are. Great Salt Lake City, June 1st.

Lupinus *decumbens*. Var. *argophyllus*, Gray, Pl. Fendl., p. 37. The whole plant clothed with short silvery hairs; leaves on long petioles; leaflets 6—8, lanceolate acute, slightly mucronate; peduncles longer than the leaves; raceme elongated; flowers rather small, rose color mixed with purple. Mrs. Carrington.

L. *albicaulis*, Dougl. in Torr. & Gr. fl. 1., p. 378. *L. falcifer*, Nutt. A larger species than the preceding and scarcely distinguishable from it, except by its elongated and falcate keel. Antelope Island. June. Major Stansbury.

ROSACEÆ.

Spiræa *dumosa*, Nutt. in Hook., London Jour. Bot. VI., p. 217. Torr. in Stansb. Rep· fig. t. IV. A small shrub irregularly branching, with small sublobate or serrate leaves; widening at top and cuneate at base. Racemes in crowded panicles; carpels 5. Stansbury Island, Major Stansbury.

S. . . . . *Opulifolia*. Var. *pauciflora*, Torr. & Gr., fl. 1., p. 414. Leaves small roundish, three-lobed, nearly glabrous; corymbs pedunculated, few-flowered; carpels 1, 2—4, tomentose. Summit of mountain in Stansbury Island. May. Maj. Stansbury.

Cowania *Stansburyana*, Torr. in Stansb. Rep., p. 368, T. III. A shrub 6—12 feet high, much branched; leaves growing from short spurs 4—6 lines long and deeply cut in 5—7 lobes, partly tomentose underneath; flowers solitary, terminal; calyx turbinate, glandular, with broadly obtuse segments; petals sulphur-yellow, broadly obovate, longer than the calyx; style persistent, and, in fruit, 1 inch and more in length and beautifully plumose. Stansbury Island, Major Stansbury.

Potentilla *gracilis*, var. *flabelliformis*. Nutt. in Torr. and Gr., fl. 1., p. 440. Cinque Foil. Stem 15—20 inches high, villous-pubescent, leaves palmate, 5—9 foliate, leaflets deeply pinnatifid, the lobes linear-lanceolate: flowers yellow, abundant in Yuba Valley. May and June, Mrs. Carrington.

Rosa. . . . Major Stansbury mentions in his report, to have seen rose bushes in the meadows at the foot of the mountain on the eastern shores of the lake.

Cratægus. . . . (Hawthorn.) A species of cratægus was observed by Col. Fremont at the northern end of the Great Salt Lake.

ONAGRACEÆ.

ŒNOTHERA *cæspitosa.* Torr. and Gr., fl. 1., p. 500. (Evening Primrose.) Shores and Islands of Great Salt Lake, Major Stansbury.

Var. *montana.* Œ. montana, Nutt. in Torr. and Gr., fl. 1, p. 500. Stemless and cæspitose; leaves lanceolate, sinuate-toothed, tapering into a petiole, expanding at base; margins quite woolly; flowers large, white and red. As Dr. Torrey remarks at page 387 of Stansb. Report, the three species of Nuttall forming the group *Pachylophis* of Spach, should be thrown into one species. They seem to differ only by the capsule being nearly sessile in *œ. cæspitosa;* quite sessile, in *œ. montana* and pedicellate in *œ. marginata.* Valley of the Great Salt Lake, Mrs. Carrington.

Œ. . . . *albicaulis,* Nutt. in Torr. and Gr., fl. 1, p. 495. One foot high or more, erect, branching at top, glabrous, whitish; leaves narrow-lanceolate, mostly entire or remotely toothed: flowers axillary, rather small, white, drying purple. Islands and Valley of the Great Salt Lake. June. Major Stansbury and Mrs. Carrington.

Œ. . . . *Scapoidea,* Nutt. in Torr. and Gr., fl. 1, p. 506. A very diminutive plant with a few ovate radical leaves, obscurely denticulate, on a petiole about the length of the limb; scape 3—4 inches, usually naked, bearing 6—13 very small flowers on slender pedicels with minute bracts. Capsule very large in proportion to the flower. Western shores of the Salt Lake. May. Major Stansbury.

GAYOPHYTUM *ramosissimum.* Torr. and Gr., fl. 1, p. 513. A small and divaricately branched plant with very small flowers at the extremity of the branches, resembling those of *œnothera scapoidea;* capsule short, linear-clavate, shorter than the capillary pedicels. Antelope Island. Major Stansbury.

LOASACEA.

MENTZELIA *albicaulis.* Dougl. in Torr. and Gr., fl. 1, p. 534. *Bartonia albicaulis.* Hook, fl. Bor. Am., 1, p. 222. Stem white and polished, branching from the base, nearly glabrous below, leaves lanceolate, deeply sinuate-pinnatifid, sessile, remote; flowers small, not bracteolate, yellow. Valley of the Great Salt Lake. Major Stansbury.

M. . . . *Ornata.* Torr. and Gr., fl. 1, p. 534. *Bartonia ornata.* Nutt. Stem 2—4 feet high, with short barded hairs, much branched, leaves sessile, oblong-lanceolate, sinuate-pinnatifid, flowers very large, yellowish-white, odorous and vespertine. Islands; of the Great Salt Lake. Major Stansbury.

CACTACEA.

Several species of *cactus* or *opuntia* were seen by Major Stansbury on Antelope Island, and one with very long spines, at the northern extremity of the Lake.

SAXIFRAGACEÆ.

HEUCHERA *rubescens.* Torr. in Stansb. Rep., p. 388, t. V. Scape naked, glabrous. Leaves suborbicular, 5—7 lobed; lobes crenate, dentate; flowers 15—25, loosely paniculated in remote branchlets with a small bract at the base of the pedicel. Rhizoma thick, somewhat ligneous, clothed with the brown vestiges of anterior leaves. June. Stansbury Island, Major Stansbury.

UMBELLIFERÆ.

THASPIUM *cordatum.* Torr. and Gr., fl. 1, p. 615. (Meadow Parsnip.) Radical leaves simple, cordate; cauline ones ternately divided, the segments oval, serrate; winged ribs of the carpels equal; flowers yellow. May. Yoab Valley, Mrs. Carrington.

T. . . . . *montanum.* Gray, Pl. Fendl., p. 57. Stems 5—8 inches high; leaves 2—3, pinnatifidly cut with oblong, acute, entire or incised lobes; flowers yellow, in dense umbels, with numerous rays. May 25th. On a mountain bordering the Salt Lake, Maj. Stansbury.

PEUCEDANUM *triternatum.* Nutt. Torr. and Gr., fl. 1, p. 626.

Var. *platycarpum.* Torr. in Stansb. Rep., p. 389. Root tuberous, large and somewhat fusiform. Stems 1—2 feet high; leaves 2—3, ternately divided, segments of the leaves 1—3 inches long, 1—3 lines wide, peduncles very long, flowers polygamous or dioicious; fruit obovate, very broadly winged, much more so than Nuttall's plant. Valley of the Great Salt Lake, Major Stansbury.

Leptotænia. . . . . A species of this genus was observed by Colonel Fremont on the north side of the Lake.

VALERIANACEÆ.

VALERIANA *edulis.* Nutt. in Torr. and Gr., fl. 2, p. 48. (Valerian.) Root fusiform, fleshy; stems erect; lower leaves entire, linear-lanceolate, or 1—2, pinnately parted with divaricate lobes; the cauline deeply pinnatifid with ciliate linear segments.

The specimen which I have received, is only the upper part of a stout stem, about 10 inches long, bearing a long panicle of flowers, fully one half of its length, the two lower cymules of which are pedicellate and interrupted. All the cymules are very much crowded with flowers. At the base of the panicle are two opposite leaves, palmately pinnatifid, with dilated petioles, and three inches below these, another set of opposite leaves, much larger, but of the same form, with lanceolate-linear divisions 1 inch long and finely ciliate. May. Mrs. Carrington and Colonel Fremont.

The root is called by the natives *Kooyan;* when baked on heated stones or steamed under ground, it is converted into a pulpy mass, sweet and rather agreeable to the taste, which furnishes food to the aborigines.

COMPOSITÆ.

EUPATORIUM *purpureum*. Linn. Torr. and Gr., fl. 2, p. 81. (Thoroughwort.) Stem stout, simple, fistular; leaves verticillate, oblong-ovate or lanceolate, veined, scabrous or glabrous above, serrate with mucronate teeth. Heads in large compound corymbs of purple or flesh-colour flowers. Northern end of the Great Salt Lake, Colonel Fremont.

ASTER *oblongifolius*. Nutt. in Torr. and Gr., fl. 2, p. 143. (Starwort.) Stem much branched, somewhat hairy; branchlets loosely paniculate-corymbose; leaves narrowly oblong or lanceolate, partly clasping, mucronulate scales of the involucre numerous, somewhat glandular, with elongated and squarrose-foliaceous summits; achenia caulescent. June. Stansbury Island, Major Stansbury.

ERIGERON *macranthum*. Nutt. in Torr. and Gr., fl. 2, p. 173. (Fleabane.) Stem leafy to the summit; leaves glabrous, with ciliate margins, the lowermost spathulate, tapering into a petiole; the upper sessile, partly clasping, oblong-obovate or elliptical, obtuse; flowers rather large, with purplish-blue ligules. June. Great Salt Lake Valley, Mrs. Carrington.

E. . . . . *concinnum*. Torr. and Gr., fl. 2, p. 174. Very hirsute throughout. Stems several from the same root, slender, leafy and branching above, the branches terminating by single heads on long peduncles; leaves narrowly linear, entire, the lowermost tapering into a petiole; rays white or pale blue, numerous, in a single series; involucre very hirsute. Great Salt Lake Valley, Major Stansbury, Mrs. Carrington.

Small undeveloped specimens of the above, 2—3 inches high, from Mrs. Carrington's collection, might be mistaken for *E. pumilum* of Nuttall.

LINOSYRIS *serrulata*. Torr. in Stansb., Rep. p. 389. Leaves narrowly linear, 3 nerved, rigid, acute, serrulate; heads fastigiate, corymbose, subquadriflore; scales imbricated in 4—5 series, oblong-lanceolate, spreading, the exterior ones shorter. Valley of the Great Salt Lake, Major Stansbury.

L. . . . . *graveolens*, Torr. and Gr., fl. 2, p. 234. Shrubby and much branched; leaves very narrowly linear, glabrous, uninerved; heads five-flowered, clustered; scales of the involucre few, loosely imbricated in about 3 series, glabrous, carinate; the outermost very short, oblong-ovate; the others elongated, linear. Northern extremity of the Great Salt Lake. Col. Fremont.

LAPHAMIA *Stansburyi*. Gray, Pl. Wrightianæ, part 1, p. 101. Stems nearly a foot high; heads three lines long, and as broad; scales of the involucre about fifteen, lanceolate-oblong; branches of the style filiform-subulate. Near the Great Salt Lake, Capt. Stansbury.

STENOTUS *cœspitosus*. Nutt. in Torr. and Gr., fl. 2, p. 238. A small plant, 4—6 inches high; leaves crowded at the summit of the woody caudex, narrowly lanceolate or linear, acute, three-nerved; those of the stem or branching scapes, few. Flowers bright yellow; scales of the involucre in three series, broadly obovate, erose-ciliate. Valley of the Salt Lake, Major Stansbury.

GRINDELIA *squarrosa,* Dunal. Torr and Gr., fl. 2, p. 247. Corymbosely branched, glabrous; leaves oblong-lanceolate, obtuse, finely serrate, somewhat clasping; scales of the glutinous involucre with recurved-squarrose, or mostly circinate subulate tips. Heads small, numerous, yellow. Near the hot and cold springs at the mouth of Bear River, May, Major Stansbury.

AMBROSIA *coronopifolia.* Torr. and Gr., fl. 2, p. 291. (Ragweed.) Stem 1—5 feet high, canescently strigose. Leaves 2—5 inches long, clothed with very appressed hairs; the upper sessile, lanceolate, deeply incised or pinnatifid; the lower somewhat bipinnatifid, on short margined petioles. Sterile heads in loose spicate racemes; fertile ones, solitary or several clustered at the base of the sterile spike. Fruit globose-ovoid. Table land at the northern extremity of Salt Lake Valley, Major Stansbury.

BALSAMORHIZA *hirsuta.* Nutt. Hirsute. Leaves very long, lanceolate, pinnately divided, the divisions oval or oblong, entire or incised, the lower pinnatifid; scape naked, 6—12 inches high, bearing a single and very large head, of yellow flowers. The root of this plant, when wounded, exudes a copious liquid resin, which has a strong odour of turpentine. Utah Valley, May, Mrs. Carrington.

LEPACHYS *columnaris.* Torr. and Gr., fl. 2, p. 315. Primordial leaves undivided; those of the stem pinnately parted, segments linear-lanceolate, entire, rarely lobed. Disk columnar, one inch and more long, rays yellow and recurved. In sandy soil, Mrs. Carrington.

MONOTRIX *Stansburiana.* Torr. in Stansb. Rep., p. 390, t. VII. About a span high, and minutely glandular-pubescent. Lower part of the stem ligneous, branches herbaceous. Leaves small, broadly ovate, with a few coarse teeth somewhat lobed. Head hemispheric, radiate. Scales of the involucre glandularly puberulous, in 3 series. Disk-flowers four-toothed, those of the ray short and three-toothed. In the crevices of limestone rocks in Stansbury Island. June. Major Stansbury.

CHENACTIS *stevioides.* Hook. and Arn., Torr. and Gr., fl. 2, p. 371. Stem very low, corymbosely branched. Leaves when young, somewhat woolly, pinnately divided, the divisions linear, obtuse, entire or sometimes pinnatifid. Involucre glandular, puberulent; flowers white or flesh colour. Strong's Knob, Major Stansbury.

C. . . . . *achilleæfolia.* Hook. and Arn., Torrey in Stansb. Rep., p. 390, t. VI. Stem about a span high; leaves somewhat fleshy and clothed with a white tomentum, the lobes very small, obtuse, and much crowded. Head few in a terminal corymb; flowers of the ray and disk nearly alike, funnel form. Pappus of about ten oblong, obtuse, denticulate scales, five of which in the disk flowers, are nearly as long as the tube of the corolla, and the other five about half as long. Stansbury Island, June. Major Stansbury.

LAYIA *glandulosa.* Hook. and Arn., Torr. and Gr., fl. 2, p. 394. About one foot high, erect and hispid towards the base; leaves broadly linear, entire; peduncles of the cauline leaves and involucre glandular; heads large, rays white, 3—cleft, double the length of the involucre. Valley of the Great Salt Lake, Major Stansbury.

ACHILLEA *millefolium*, Linn. Torr. and Gr., fl. 2, p. 409. (Yarrow.) Islands of the Salt Lake, Major Stansbury.

. . . . Var. *lanata*, Koch. Densely woolly, with finely bipinnately parted leaves; heads rather larger than the common species; the whole plant bearing a whitish tomentose appearance. Great Salt Lake City, Mrs. Carrington.

ARTEMISIA————(generally called Sage or Wormwood.) The genus *Artemisia* is extensively spread in the Western regions; not less than thirty distinct species have already been described as belonging to Oregon and California, several of which are hardy and shrubby plants from 3 to 6 feet high. Col. Fremont, Maj. Stansbury and Lieut. Beckwith speak of large patches of *Artemisia* on the flats of the Great Salt Lake; but, as far as I know, they have brought no specimens to permit us to ascertain to what species of this genus this *Artemisia* belongs. It is probable that it is one or several of the four species enumerated by Dr. Torrey, as found by Maj. Stansbury on the shores of the Green River, 160 miles from the Great Salt Lake City, viz.: *A. tridentata*, *A. frigida*, *A. Ludoviciana*, *A. Canadensis.*

SENECIO *Hookeri.* Torr. and Gr., fl. 2, p. 438. (Groundsel.) Stem simple, 6—12 inches high; radical and lowest cauline leaves ovate or spathulate-oblong, repand-denticulate or entire, contracted into a short margined petiole; the upper leaves lanceolate, entire, sessile; scale of the involucre nearly glabrous. Flowers rather small; rays bright yellow. Mouth of Weber River. May. Major Stansbury.

S. . . . . *hydrophyllus.* Nutt. in Torr. and Gr., fl. 2, p. 440. Stem simple, striate, very glabrous, rather leafy, leaves lanceolate, entire or obsolately repand-denticulate; the radical and lowest cauline elongated, tapering into a thickish somewhat clasping petiole. Heads in a compound naked corymb; rays 3—6, very small; the tips of the involucral scales purplish. Valley of the Salt Lake, Maj. Stansbury.

S. . . . . *filifolius* Nutt. in Torr. and Gr., fl. 2, p. 444. Suffruticose and much branched, the branches diffuse, very leafy to the summit. Leaves pinnately 5—9 parted, segments very narrowly linear with revolute margins; heads rather large, rays 6—8, linear, elongated. Valley of the Salt Lake, Major Stansbury.

S. . . . . *eremophyllus.* Richards. in Torr. and Gr., fl. 2, p. 444. Stem glabrous, striate, 15—20 inches high; leaves interruptedly pinnatifid, the segments unequal with a few teeth. Heads in a loose compound corymb, somewhat larger than those of *S. aureus,* which it resembles much. Great Salt Lake County, April. Mrs. Carrington.

TETRADYMIA *Nuttallii.* Torr. and Gr., fl. 2, p. 447. Shrubby and much branched, 2—3 feet high. Primary leaves mostly converted into subulate spines, the other densely fascicled in their axils, thickish, linear-spathulate, obtuse, covered with a deciduous tomentum. Heads fascicled in corymbose clusters on very short peduncles, bright yellow. Shores of the Salt Lake, May. Major Stansbury.

CIRSIUM *undulatum,* Spreng. Torr. and Gr., fl. 2, p. 456. (Plumed Thistle.) Canescently tomentose throughout. Stem low, angled, branched above; branches bearing a solitary head; leaves lanceolate-oblong, sinuate-pinnatifid, very white and tomentose beneath; involucre sub-globose, with lanceolate appressed scales tipped with a weak spreading prickle; flowers large, reddish-purple. Stansbury Island, June. Major Stansbury.

STEPHANOMERIA *runcinata.* Nutt. in Torr. and Gr., fl. 2, p. 472. Stem 4—8 inches high with flexuous striate branches. Radical and lower cauline leaves runcinate, those of the fertile branches linear-subulate; head 5—6 flowered; involucre cylindrical; flowers rose colour. Carrington Island, Major Stansbury.

LIGODESMIA *juncea.* Don. in Torr. and Gr., fl. 2, p. 484. 15—20 inches high, very glaucous; stem branched, striate; lower leaves linear-sublanceolate, rigid; the upper subulate; head five-flowered, large, fully 1½ inch long, with an elongated cylindrical involucre of 5—6 scales; ligules double the length of the scales, finely dentate at top, lilac colour. It is the same large flowered form mentioned by Prof. Torrey in Stansb. Rep., p. 392. It is larger in all its parts than any other specimens of the same species, that I have seen. The lower stem leaves are 4—5 inches long. The whole plant is very smooth and whitish, and grows in various soils on the Islands and Valleys of the Great Salt Lake. Major Stansbury and Mrs. Carrington.

MALACOTRIX *sonchoides.* Torr. and Gr., fl. 2, p. 486. Dwarfish, glabrous; stems branching; radical leaves linear-oblong, runcinate, with short approximate lobes spinulosely-denticulate; cauline leaves small and scattered; heads of 30—40 small flowers; exterior scales of the involucre erose-denticulate; flowers yellow. Shores of the Salt Lake and Carrington Island, Major Stansbury.

CREPIS *acuminata.* Nutt. in Torr. and Gr., fl. 2, p. 489, and Torr. in Stansb. Rep., p. 392, t. viii. Stem scapiform, 1—3 feet high, sparingly leafy; radical leaves fully twelve inches long with the petiole, runcinate-pinnatifid, tapering at the base into a petiole one third of its whole length, and at the apex into a slender entire acumination. Heads cylindrical, with very short scales; flowers yellow. Stansbury Island. June. Major Stansbury.

C. . . . . *occidentalis.* Nutt. in Torr. and Gr., fl. 2, p. 489. Stems scapiform, 15 inches high; radical leaves runcinate, pinnatifid, tapering into a long petiole, and both together 6—12 inches long; divisions narrowly lanceolate, acuminate, sparingly acutely dentate; the lower cauline leaves sessile and pinnately parted, the upper ones entire; heads large, 3—5 in a paniculate corymb; involucral scales in two series, the internal ones very long, narrowly lanceolate, the outer bracteolate; flowers yellow. Nuttall's specimen was a dwarfish state of this rather large plant. Salt Lake Valley, Mrs. Carrington.

TROXIMUM *cuspidatum.* Pursh. Torr. and Gr., fl. 2, p. 489. (Acaulescent.) Leaves narrowly linear-lanceolate, acuminate, somewhat nerved, especially on the broad midrib; the often undulate margins tomentose: scales of the involucre somewhat scarious, lanceolate, cuspidate-acute, glabrous, in two equal series; flowers large, yellow. Valley of the Great Salt Lake, Major Stansbury.

T. . . . . *parviflorum.* Nutt. Torr. and Gr., fl. 2, p. 490. Villous-pubescent when young, at length glabrous; leaves narrowly linear, lanceolate, acuminate, entire, but sometimes retrorsely denticulate towards the base; scales of the glabrous involucre lanceolate, acuminate, in 2—3 series, the outer of which is bracteolate; flowers yellow. Yoab Valley, Mrs. Carrington.

ERICACEÆ.

ARCTOSTAPHYLOS *glauca.* Lindl. in D. C. Prodr. VII., p. 388. (Bearberry.) A shrub. Leaves glaucous, oval-oblong, acute, coriaceous and obtuse at the base; racemes short and compound; bracts squamiform; fruits ovate. Pauvan Valley, Mrs. Carrington.

PRIMULACEÆ.

DODECATHEON *integrifolium.* Var. minus? Hook., fl. Bor. Am. 2, p. 118. A miniature form with flowers scarcely one-third of an inch from the summit of the reflexed divisions of the white corolla to the tip of the anthers; scape and pedicels purplish, the latter very short and reflexed only in the full expansion of the flowers; involucre of five short folioles, broadly ovate and approximate in the form of a truncated funnel; filaments yellow, and free immediately below the purple-blue anthers, which are all divergent: capsules not seen; leaves oval-oblong, entire, tapering at the base into a narrow petiole; petiole and limb 2½—3 inches long. Rich soil on the banks of Leven River, Salt Lake Valley, May 15th, Mrs. Carrington.

OROBANCHACEÆ.

APHYLON *fasciculatum.* Torr. and Gr. in Gray's Man., p. 281. *Orobanche.* Nutt. *Anoplanthus,* Walp. in D. C. Prodr. X., p. 42. (Naked Broom Rape.) Pulverulent, pubescent; stem short, scaly; peduncles fasciculate, naked, one-flowered; calyx ebracteate, lobes triangular-acute, the tube of the corolla long and re-curved; lips erect, concave, short and obtuse, the superior bifid, the inferior trifid; filaments glandular, anthers glabrous; flowers pinkish-white. Great Salt Lake City. June. Mrs. Carrington.

SCROPHULARIACEÆ.

MIMULUS *luteus.* Linn. D. C. Prodr. X., p. 370. (Monkey Flower.) Glabrous; leaves ovate-orbicular, erose-dentate, the lower longly petiolate, sublyrate, the upper sessile or cordate-amplexicaule; calyx ovate and inflated in seed, the upper tooth larger; corolla yellow, the tube at least twice the length of the calyx. Great Salt Lake Valley. June. Mrs. Carrington.

VERONICA *Americana.* Schw. D. C. Prodr. X., p. 468. (American Brook Lime.) Glabrous; leaves mostly petiolate, opposite, ovate-oblong, serrate, truncate or subcordate at base; racemes pedunculate, axillary, opposite; corolla pale blue with purple stripes; capsule rounded, turgid, notched at the top. Great Salt Lake County. April—June. Mrs. Carrington.

CASTILLEJA *hispida.* Benth. in D. C. Prodr. X. p. 532. (Painted cups.) Hispid. Stem-leaves lanceolate, mostly three cleft, divisions linear, elongated, the floral ones broader. Lobes of the calyx two cleft, the divisions oblong, almost linear, shorter than the red corolla, helmet 4—5 times longer than the inferior lip. Shores of the Salt Lake, Maj. Stansbury, and Mrs. Carrington.

C. . . . *miniata,* Dougl. in Hook. fl. Bor. Am. 2, p. 106. Glabrous, or hairy at top. Cauline leaves entire, lanceolate, floral ones incised and minium coloured. Spike dense, and sometimes becoming interrupted. Lobes of the calyx bifid with almost linear divisions; the upper lip of the corolla 4—5 times longer than the inferior one. With the preceding, Maj. Stansbury.

C. . . . *sessiliflora,* Pursh. Gray, Man. p. 294. Hairy, leaves mostly three cleft, with narrow divergent lobes, floral ones broader and scarcely coloured; spike crowded; calyx cleft in front, the divisions two cleft, shorter than the tube of the long-narrow and greenish-yellow corolla, which has the lobes of the lower lip slender and half the length of the upper lip. Mouth of Weber River, Maj. Stansbury.

BORRAGINACEÆ.

MERTENSIA *oblongifolia,* Don. D. C., Prodr. X. p. 92. (Smooth Lungwort.) Smooth, simple, erect. Leaves lanceolate-oblong; flowers paniculate, pedicellate; calyx short, with linear lobes, acute and ciliate; corolla tubular-campanulate, blue. Northern end of the Great Salt Lake, Col. Fremont.

M. . . . *Drummondii*, Don. D. C. Prodr. X. p. 89. Stem ascending, glabrous; leaves glaucous, punctate, subdenticulate; the radical ones ovate-lanceolate, petiolate; the cauline sessile, oblong-lanceolate; panicles terminal, crowded; corolla three times longer than the calyx. Salt Lake Valley, Maj. Stansbury.

AMSINCKIA *lycopsoides*, Lehm. in D. C. Prodr. X. p. 117. Stem branching; cauline leaves ovate-lanceolate; throat of the corolla hairy, the tube three times longer than the limb; stamens inserted on the tube a little above the base. Shores of the Salt Lake, Maj. Stansbury.

ERITRICHIUM *glomeratum*, D. C. Prodr. X. p. 131. (Stick-seed.) Stem erect, simple; leaves spathulate, on long petioles, hirsute. Spikelets paniculate, 5—7 flowered, axillary, conglomerate, sometimes bifid with the upper spikelet sessile. Calyx very hirsute, lobes linear-lanceolate, as long as the tube; limb of the corolla very small, yellowish-white. Valley of the Great Salt Lake, Maj. Stansbury, and Mrs. Carrington.

ECHINOSPERMUM *floribundum*, Lehm. in D. C. Prodr. X. p. 143. Stem erect, fistulous, sparingly hirsute; cauline leaves sessile, ciliate, pubescent, radical ones lanceolate, petiolate; racemes bifid, bracteolate; nutlets ovate prickly; flowers, in our specimens, white, rather large. Great Salt Lake Valley, Mrs. Carrington.

HYDROPHYLLACEÆ.

EUTOCA *heterophylla*, Torr. in Stansb. Rep. p. 393. Erect, glabrous, pubescent; leaves 2—3 inches long, subsessile, oblong-linear, entire or furnished on each side with an oblong or linear lobe; flowers blue, shortly pedicellate; lobes of the calyx ciliate, obtuse; corolla widely campanulate, almost rotate, lobes rounded, larger than the calyx, appendages ten in pairs between the bases of the filaments. Valley of the Great Salt Lake, Maj. Stansbury and Mrs. Carrington.

POLEMONIACEÆ.

PHLOX *speciosa*, Pursh. D. C. Prodr. IX. p. 307. Cœspitose, rigid, erect, glabrous. Leaves linear-subulate; base of the calyx strongly 5—nerved, pentagonal, with rigid subulate teeth; divisions of the corolla entire, obovate, cuneiform, flower pinkish. Great Salt Lake Valley, Mrs. Carrington.

P. . . . *canescens*, Torr. in Beckw. Rep. p. 122, t. VI. Dwarf, very much branched and densely cœspitose, tomentose when young and canescent. Leaves acerose, imbricated, at length recurved, spreading, not rigid, and very woolly towards the base. Flowers sessile; teeth of the calyx similar to the leaves; tube of the corolla much larger than the calyx. Mountain south of the Great Salt Lake, Lt. Beckwith. Wahsatch Mountains, Mrs. Carrington.

P. . . . *humilis*, Dougl. in D. C. Prodr. IX. p. 306. Suberect, pubescent; leaves linear-subulate, subfasciculate; divisions of the limb of the corolla obovate, mucronate. Flowers white. On a rocky mountain above the eastern valley, Mrs. Carrington.

P. . . . *Hoodii*, Richards. in Frankl. Journ. app. ed. 2, p. 6, t. 28. Dwarf, very ramose and cæspitose. Leaves linear-subulate, rigid, fasciculate, flowers sessile, the teeth of the calyx short, subulate, rigid; divisions of the corolla obovate, entire, very obtuse. Mountains on the Salt Lake, Maj. Stansbury.

Among the plants of Mrs. Carrington is a small phlox, scarcely one inch high, collected in a rocky soil, which seems to be intermediate between *P. Richardsoni* and *P. Hoodii*—but on account of its insufficiency I cannot determine its true character. I think there is yet a great confusion among these dwarfish acerose species.

P. . . . *longifolia*, Nutt. D. C. Prodr. IX. p. 307. Subcæspitose, several stems from the same root; branchlets short, irregularly trichotomous, pauciflore. Leaves subulate, very long and narrow, glabrous; peduncles filiform, elongated; divisions of the calyx acuminate, those of the corolla oblong-cuneate, entire. Mouth of Bear River, May, Maj. Stansbury.

COLLOMIA *gracilis*. Dougl. D. C. Prodr. IX. p. 308. Very small, ramose. Leaves linear-obtuse; the lower ones ovate, oblong, opposite; the divisions of the calyx linear, as long as the tube of the minute white corolla. Ogden Pass, Maj. Stansbury. Yoab Valley, May, Mrs. Carrington.

GILIA *pulchella*, Dougl. in Hook. fl. Bor. Am. 2, p. 74. Erect, 1—2 feet high. Stem paniculate at top; leaves pinnately cut, segments linear; calyx short, narrowly lanceolate, mucronate; corolla elongated, tube nearly one inch long, divisions of the limb ovate-acute. Ogden Pass, Maj. Stansbury; Yoab Valley, May, Mrs. Carrington.

SOLANACEÆ.

PHYSALIS *angulata*. Linn. Gray's Man. p. 339. (Ground Cherry.) Erect and much branched, glabrous; leaves ovate or ovate-oblong, often very sharply toothed; corolla somewhat five-lobed, small; calyx with broadly triangular subulate teeth as long as the tube, becoming conical-ovate and sharply five-angled. Great Salt Lake Valley, June, Major Stansbury.

GENTIANACEÆ.

GENTIANA *affinis*. Griseb. in Hook. fl. Bor. Am. 2, p. 56. (Gentian.) Stem ascending; lower leaves obovate-oblong, obtuse; upper ones lanceolate acute with scabrous margins; cymes racemiform; the lower flowers solitary, pedicellate, the upper aggregate, subsessile; calyx 5-cleft, half the length of the corolla, divisions oblong-linear, at length dilated; corolla open, narrow, obconical, of a blue color, with oblong lanceolate-obtuse lobes 3 times longer than the cleft appendages. Great Salt Lake Valley, Major Stansbury.

ASCLEPIADACEÆ.

ACERATES *decumbens.* Decaisnes in D. C. Prodr. VIII. p. 522. *Anantherix decumbens,* Nutt. (Milk Weed, Silk Weed.)

Var. *erecta.* Stem erect, 3 feet high. Leaves scattered, sometimes verticillate in threes, ovate-lanceolate, 4—5 inches long and 1 broad, shortly petiolate. Umbel terminal solitary, globose, 2½—3 inches in breadth; pedicels pubescent; calyx and corolla green, crown deep purple. Great Salt Lake City. May. Mrs. Carrington. Probably the same that was found by Major Stansbury on Stansbury Island, and mentioned by him, at page 175 of his report, under the name of Silk-plant.

CHENOPODIACEÆ.

OBIONE *canescens.* Moq. in D. C. Prodr. XIII. p. 112. *Plerochitum occidentale,* Torr. & Frem., in Fremont's 2d Rep., p. 318. Stem suffrutescent, erect, somewhat angular; leaves sessile, alternate, oblong or linear-oblong, entire, covered with a whitish-mealy crust; flowers dioicious, glomerate on short pedicels at the summit of the branches; fruit compressed, from bracts 2 lines long. Saline soils on the border of the Lake, Maj. Stansbury and Col. Fremont.

O. . . . *confertiflora,* Torr. and Frem. Rep. Stem pubescent, much branched, erect; leaves alternate, ovate, rather obtuse, petiolate, entire, crowded, somewhat coriaceous, white with a mealy crust; bracts broadly ovate, obtuse, entire, the sides without appendages. A small shrub with rigid, crooked and somewhat spinescent branches of a whitish aspect. On the flats of the Lake with the preceding, Col. Fremont.

GRAYA *polygonoides.* Hook. and Arn. in Hook., Icon. pl. t. 281 and 388. *G. spinosa,* Dougl. in D. C. Prodr. XIII., p. 119. (Grease-wood.) Stem erect and branching; branches ascending or divaricate, terminating into a spine, and covered with a whitish bark; leaves 6—10 lines long, 1½—2 broad, oblong-lanceolate or obovate, cuneate at base, fleshy, subcoriaceous, whitish; calyx fructiferous, elliptic, emarginate at base; style persistent, shortly apiculate; fruit very small, resting on the centre of the calyx; seed orbicular-elliptic, with a somewhat obtuse margin. Saline Shores of Carrington Island. Major Stansbury.

SALICORNIA *herbacea?* (Glasswort.) Linn. Gray's Man., p. 366. Annual, erect or ascending, much branched; the joints somewhat thickened at their summit, and with two short blunt or notched teeth; spikes elongated, tapering, but rather obtuse at the apex. Southern Flats of the Great Salt Lake, Colonel Fremont.

ARTHROCNEMUM *fruticosum.* Moq. in D. C. Prodr. XIII., p. 151. Torr. in Stansb. Rep., p. 394. Stem frutescent, one foot high, and much branched; the joints of the branches more or less compressed; spikes cylindrical, and not jointed; flowers alternate, immersed in deep excavations of the rachis; calyx quadrangular, consisting of four cohering sepals which are cuculate, spongy at the summit, and at length separate from each other; stamen solitary; seed oblong and loose in the utricle. A common plant in all the Salines of New Mexico and California, Northern Flats of the Great Salt Lake, Major Stansbury.

CHENOPODINA *linearis*. Moq. in D. C. Prodr. XIII., p. 164. (Sea Goosewort.) About three feet high, lower part of the stem stout and shrubby. Leaves long, semiterete, acute, dilated at base and subamplexicaule; flowers axillary, sessile, solitary, or 2—3 glomerate, subspicate; calyx fructiferous, but little inflated, cuculate-carinate, greenish; seed acute, with a very short beak. Western Shores of the Lake, Major Stansbury.

NYCTAGINACEÆ.

ABROMIA *mellifera*. Dougl. in Hook. Bot. Mag. t. 2879. D. C. Prodr. XIII. p. 435. Stem procumbent, ramose, succulent-glutinous, greenish; leaves fleshy, veined, long-petiolate; peduncles 4—6 inches high; involucre 5-cleft, lobes oblong-lanceolate, at length reflected; flowers not crowded; perigonium less than one inch long; tube greenish, glabrous, often incurved, with a slender base; limb 5-cleft, with undulating lobes; stamens about the length of the calyx, style shorter, fruit with 5-winged ribs. Strong's Knob, Major Stansbury.

A. . . . *fragrans*. Nutt. Hook. Kew Journ. Bot. V. p. 261. Distinguished from *A. mellifera* by its very numerous, pure white and highly fragrant flowers; tube of the perigonium filiform; involucre composed of 5—6 very large, broadly ovate, scarious-white leaflets; fruit scarcely winged. Near Sand-Hill Creek. Great Salt Lake Valley. July, Mrs. Carrington.

POLYGONACEÆ.

ERIOGONUM *ovalifolium*. Nutt. in Journ. Ac. Nat. Sc. Phil. VII. p. 50. D. C. Prodr. XIV. p. 10. Perigonia yellow, Maj. Stansbury.

Var. *purpureum*, *E. purpureum*. Nutt. Leaves all radical, petiolate, roundish-ovate, whitely tomentose; capitulum made up of several sessile whitely tomentose involucres; outer segments of the purplish perianth orbicular, sometimes emarginate at base; the inner emarginate with narrow segments scarcely exserted. Differing from E. ovalifolium, only by the purplish perigonia. On a stony mountain, on the lake, Mrs. Carrington.

E. . . . *umbellatum*, Torr. in Ann. Lyc. Nat. Hist. II. p. 241. Stem ramose from the base; leaves oval, narrowing towards the petiole, white tomentose, but at length becoming glabrous. Peduncles with 1—2 umbels; involucre villous, deeply 6—8-cleft, divisions lanceolate, reflexed, longer than the tube; perigonium glabrous, yellow. Valley of the Salt Lake, Maj. Stansbury.

E. . . . *brevicaule,* Nutt. in Jour. Ac. Nat. Sc. Ph. N. Ser. 1 p. 163. *E. Fremontii,* Torr. in Frem. Rep. Branches very short, clustered, tomentose; leaves linear-lanceolate, elongated and rather acute, attenuated into a long petiole, whitely-tomentose beneath, less so above; upper scapoid stem very smooth; bracts acuminate, tomentosely margined; umbel 2—3 times compound, with very large rays; flower small, glabrous, yellow. Valley of the Great Salt Lake, Maj. Stansbury.

SANTALACEÆ.

COMANDRA *Pallida,* D. C. Prodr. XIV. p. 636. (Bastard Toad-Flax.) Stem almost herbaceous; peduncules several, corymbosely clustered at the summit; calyx tube conspicuously continued beyond the ovary, forming a neck to the globular urn-shaped fruit; the lobes oblong; style slender; fruit dry. Stansbury Island, Major Stansbury. Salt Lake Valley, Mrs. Carrington.

URTICACEÆ.

CELTIS. . . . (Nettle Tree.) A species of celtis perhaps new? Was seen by Col. Fremont at the southern extremity of the Salt Lake.

CUPULIFERÆ.

QUERCUS. . . . (Oak.) Timber is said to grow on the Oquirrh Mountains, and on the hills of Stansbury Island, composed of oak and other trees.

SALICACEÆ.

SALIX. . . . (Willow.) Willows are common in the meadows at the foot of the mountains, and their presence is an indication of springs of running water.

POPULUS *monilifera,* Ait. Gray's Man. p. 419. *P. Canadensis,* Mich. (Cotton Wood.) Young branches slightly angled, at length becoming round. Leaves broadly deltoid, with spreading prominent nerves, slightly heart-shaped or truncate at base, taper-pointed, serrate. Fertile catkin very long; scales lacerately fringed, dilated and very large. Mouth of Weber River, Col. Fremont.

CONIFERÆ.

Pines and cypress in stunted forms are found on the tops of mountains, and even large trees on the Oquirrh Mountains, and hills of Stansbury Island.

EPHEDRA *Americana.* Willd. Torr. in Stansb. Rep. p. 395. A leafless shrub, with numerous fastigiate cylindrical-pointed branches, furnished at each joint with a sheath of two oval-acuminate and subulate leaflets. Catkins about four, one of which bears the male flower, appearing at the joints of the branches. Fruit an oval two-seeded berry, formed from the scale of the calyx becoming fleshy after flowering; seed oval-acute, convex on one side, flat on the other. Shores of the Salt Lake, Maj. Stansbury.

JUNCAGINEÆ.

TRIGLOCHIN *maritimum.* Linn. Gray's Man. p. 437. (Arrow Grass.) A plant with thickish fleshy leaves, rush-like, sheathing the base of the jointed scape; flowers small, in a spiked raceme; fruit ovate or oblong, acutish, of 5—6 carpels, rounded at the base and slightly grooved at the back, the edges acute. Saline shores of Stansbury Island. June. Major Stansbury.

LILIACEÆ.

POLYGONATUM *giganteum.* Dietrich. Gray's Man. p. 446. *P. canaliculatum,* Pursh. (Great Solomon Seal.) Glabrous throughout; stem stout and tall, terete; leaves ovate, partly clasping; the upper oblong and nearly sessile, many nerved, green on both sides. Peduncles 2—8 flowered, perianth cylindrical, oblong; filaments smooth, inserted on the middle of the tube. Valley of the Great Salt Lake. Major Stansbury.

ALLIUM *stellatum.* Fraser, in Hook., fl. Bor. Am. 2, p. 184, t. 144. (Garlic.) Bulb oblong-ovate; leaves flat, linear lanceolate, shorter than the scape; scape elongated, terete; umbel erect, multiflore, loosely fastigiate; sepals oblong, acute, not longer than the stamens, of a bright red colour; ovary 3—lobed, with a double wing-like crest at top. Mouth of Weber River. May. Major Stansbury.

A. . . . . *reticulatum.* Fraser, in Hook., fl., Bor. Am. 2, p. 184, t. 145. Bulb oblong with a densely matted fibrous coat; leaves flat, linear-lanceolate, shorter than the scape; umbel erect, densely fastigiately flowered; sepals narrowly ovate, acuminate, longer than the stamens; ovary shortly 6—fid at the apex; remarkable for its white glossy flowers. Wasatch Mountains. June. Major Stansbury.

AMBLIRION *pudicum.* Torr. *Lilium pudicum.* Pursh. fl. 1. p. 228, f. 1. *Fritillaria pudica,* Spreng.

Var. *biflorum.* Torr. in Stansb. Rep., p. 396, t. IX. Root flat, orbicular and toothed round the border, with a cluster of little tubers on the upper side at the base of the two-flowered stem; leaves linear, 2—4 inches long; flowers yellow, nodding, about an inch in length, somewhat obconical or funnel form, entirely destitute of a nectariferous grove; stigma simple, undivided. Promontory Range. April. Major Stansbury.

CALOCHORTUS *Nuttallii.* Torr. in Beckwith's Rep., p. 124. *C. luteus,* Nutt. in Jour. Acad. Nat. Sc. Ph., n. s. VII. p. 19. Stem 2—4 flowered, (one specimen with 4 flowers;) leaves narrowly linear, with a long subulate acumination; radical leaves 8 inches long. Flower more than 3 inches in diameter; exterior sepals lanceolate, acute, greenish along the centre, with a scarious margin and a small purple spot towards the base, two-third the length of the inner sepals, which are dilated, wedge-shaped and shortly pointed in the centre; lamina white with an oblong-oval purple spot toward the base, in the centre of which is an oval densely tomentose brownish tuft; claw yellow. Stamens short; capsule linear-oblong, 3—sided; 3 short and reflexed stigmas. Great Salt Lake Valley. Mrs. Carrington. This description is made upon the beautiful specimens collected by this lady. I doubt not that my plant is the same as that mentioned by Professor Torrey in Stansbury's report and the same as Mr. Nuttall's plant, who, for want of a good specimen, mistook the colour of the corolla. The root is called by the natives *sego*, and is much esteemed by them as food.

ERYTHRONIUM *grandiflorum*. Pursh. fl. 1, p. 231. (Dog's Tooth.) Leaves oblong-lanceolate, obtuse; divisions of the calyx ovate-lanceolate-acuminate, reflexed from the very base; stigma 3-cleft, the segments recurved; flowers yellow, white at the base. Valley of the Salt Lake. Maj. Stansbury.

YUCCA. . . . (Bear-Grass.) Specimens with leaves only, 6—8 inches long, narrow, carinate, with an elongated spine; margin entire, white, sparingly furnished with fine white threads, scarcely curled. Mrs. Carrington.

BRODIEA *grandiflora*. Smith. Linn. trans. *Tritelleia grandiflora*. Torr. Stansb. Rep. Var. *Brachypoda*. Torr. Whippl. Rep. p. 149. Umbel multiflore, pedicels much shorter than the flowers; sterile stamens broadly lanceolate, entire. May. Great Salt Lake Valley. Major Stansbury and Mrs. Carrington.

B. . . . . *parviflora*. Torr. Whippl. Rep. p. 125. Umbel about an inch and a half in diameter; pedicels unequal, many of them scarcely half the length of the pale purple flower, the tube of which is somewhat inflated. Fertile stamens 3, inserted on the upper part of the tube, opposite the inner segments; anthers linear-oblong, acute at each end. Style filiform; stigma dilated, 3—lobed, the lobes fimbrillate-papillose. On Prevost's Fork of Utah, and perhaps also in the Salt Lake Valley. Col. Fremont.

MELANTHACEÆ.

ANTICLEA *Nuttallii*. Gray. Melanth. revised, in Ann. Lyc. New York, IV. p. 123. *Amianthium Nuttallii*. Gray. *Amientanthus Nuttallii*. Kunth. (The poison or death camass of the Indians.) Stem 18 inches high, terete, slightly sulcate towards the base; inferior leaves 6—12 inches long, carinate, acute, the middle ones shorter, attenuate; the uppermost bractiform; racemes simple, or sometimes compound; pedicels filiform with scarious filiform bracts; flowers white, sepals a little longer than the stamens, broad oval or subovate, with the alternate ones narrower, obtuse, subcordate or round, abruptly unguiculate. Valley of the Salt Lake. May. Maj. Stansbury. At the foot of the Oquirrh Mountains. Lieut. Beckwith.

JUNCACEÆ.

JUNCUS *Balticus*. Willd. Gray's Man., p. 180. (Bog Rush.) Scape rigid, 2—4 feet high, from a very strong rootstock. Panicle ascending, loose, dark chestnut colour; sepals ovate-lanceolate, the three outer sharply pointed, as long as the elliptic and rather 3—angular pod. Antelope Island. June. Major Stansbury.

COMMELYNACEÆ.

TRADESCANTIA *Virginica.* Linn. Gray's Man. p. 486. (Spider Wort.) Plant either smooth or hairy. Leaves linear-lanceolate, elongated, tapering from the sheathing base to the point, ciliate, more or less open; umbels terminal, many flowered, filaments of the stamens bearded, flowers blue, or white. On the right bank of the Elk-Horn. July. Mrs. Carrington. Her unique specimen has very narrow leaves with an umbel of a few flowers.

CYPERACEÆ.

SCIRPUS *Torreyi.* Olney. Gray's Man. p. 499. Culm 3—angled with concave sides, rather slender, 2 feet high, leafy at the base; leaves 2—3, more than half the length of the culm, triangular, channelled, slender. Spike 1—4, ovate-oblong, acute, sessile, long, overtopped by the slender, erect involucral leaf; scales ovate, smooth, entire, barely mucronate. Prof. Torrey, in Stansb. Rep., says that the specimen of Major Stansbury differs merely from the above in its longer and larger spikes and in the shorter point of the achenium. Stansbury Island. June. Major Stansbury.

GRAMINEÆ.

ERIOCOMA *cuspidata.* Nutt. Gen. 1, p. 40. *Stipa membranacea,* Pursh. *Urachne lanata.* Trin. A beautiful grass. Culm 1—3 feet high, simple; panicle spreading, dichotomous; flowers by pairs; peduncles capillary, flexuous; leaves very long, filiform, convolute, 1—foot or more long; vagina about 6 inches, entirely sheathing the stem and the panicle before evolution; ligules entire, conspicuous; calyx bivalved, 1 flowered; corolla 2—valved, short in fruit, almost spherical; seed nearly spherical. Antelope Island. June. Major Stansbury.

ARUNDINARIA. . . (Cane.) Seen by Col. Fremont at the southern end of the Lake.

UNIOLA. . . . A species of *Uniola* (Spike Grass,) was also seen by Col. Fremont with the above.

TRITICUM *repens.* Linn. *Agropyrum repens.* Gœrtn. Gray's Man., p. 569. (Quick Grass.) Rootstocks creeping extensively; spikelets 4—8 flowered; glume 5—7 nerved; rachis glabrous, but rough on the angles; awn none or not more than half the length of the flowers; leaves flat, roughish or hairy above. Antelope Island. June. Major Stansbury.

HORDEUM *jubatum.* Linn. Gray's Man. p. 570. (Squirrel-tail Grass.) A low grass.

Lateral flowers abortive, neutral, on short pedicels, short-awned; the perfect flower, bearing an extremly long awn (2 inches long,) about the length of the similar capillary glumes —all spreading. Antelope Island. June. Major Stansbury.

ELYMUS *striatus*. Willd. Gray's Man. p. 571. (Wild-Rye.) Spike dense but slender, upright or slightly nodding, 3—4 inches long, spikelets mostly in pairs, minutely bristly-hairy; glume linear awl-shaped or truly awl-shaped; bristle-awn about three times the length of the flower, not counting their capillary awn which is 1 inch long. Leaves rather narrow and sheaths smooth, or hairy, or downy. Antelope Island. June. Major Stansbury.

BUNCH-GRASS, mentioned by Maj. Stansbury, &c.*

EQUISETACEÆ.

EQUISETUM *hyemale*. Linn. Gray's Man. p. 587. (Scouring Rush.) Some Horsetails, probably the above, are mentioned by Major Stansbury and Col. Fremont as common in the meadows at the foot of the mountains and, generally, in marshy grounds.

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* Mr. George Thurber, an able botanist who has visited the Western regions, informs me that prairie men call all very good grass on high land *Grama*, and any rather coarse grass, growing in tufts, *Bunch Grass*, without regard to genera or species. The Bunch Grass of Oregon is *Elymus condensatus*, Presl. He has had also *Bouteloua curtipendula* from the far West under this name. Of the grasses mentioned in Stansbury's report by Prof. Torrey, *Triticum repens* and *Elymus Striatus* are the only ones sufficiently branchy in habit to merit the name of Bunch-Grass.